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AUTHOR Conkright, Tom
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ABSTRACT

Science educators and individual teachers have attempted to adapt global learning strategies to the local cultural environment. This research provides empirical evidence for one culture, the Kpa-Mende. Anthropological field methods were used to collect data to develop a base from which to ask meaningful questions about natural phenomena. The sample schools in general were found to offer relatively little explicit science instruction concerning natural phenomena of major concern to the Kpa-Mende. Classroom instruction tended to emphasize more abstract scientific concepts. Students were interviewed concerning the explanation for 12 natural phenomena. In the pilot study, using a three-point grading for school answers, the student responses without home explanations were found to be statistically more like the schools than those with home explanations. The main study ranked the phenomena according to the percentage of fathers who discussed a single culture item at home. A correlation of the adult percentage with student grouped scores was not significant. A correlation of adult percentage with those of students expressing the same explanations was significant at the .05 level. It was noted that many of the students failed to use school information. Strategies need to be developed to sensitize teachers to nonschool learning. (Author/EB)

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# HOME CULTURE INFLUENCE ON LEARNING ABOUT NATURAL PHENOMENA IN SCHOOL: A CASE STUDY IN SIERRA LEONE, WEST AFRICA

TOM CONKRIGHT
UNIVERSITY OF ILLINOIS
DEPARTMENT OF EDUCATIONAL POLICY STUDIES
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This abstract summarizes a pilot study and my dissertation research conducted among the Kpa-Mende, one sub-group of the largest ethnic group in Sierra Leone, West Africa.

Science educators working in the developing countries have for some time now been very sensitive to the physical environment, adapting individual science lessons to the experiences of the learner. Individual teachers have made laudable attempts to adapt global learning strategies to the local cultural environment, but generally without empirical support for their efforts. This research provides empirical evidence for one culture. Using a proactive inhibition paradigm adapted from educational and laboratory psychology, this research investigates the manner in which information concerning natural phenomena learned in the home culture can interfere with and inhibit the learning of information in the school setting.

Using anthropological field methods, data were collected in order to understand the home culture and especially to develop a base from which to ask students meaningful questions about nature. It was found that there are several natural phenomena of major concern to the Kpa-Mende for which they offer explanatory information which is considerably different from what is offered by western science. For example, many Kpa-Mende ascribe to a large frog, said to inhabit the swamplands, the power to create the rainbow. Other qualitative differences in the manner in which the Kpa-Mende relate to these phenomena were noted, but the emphasis in this research is on the informational repertoire.

The sample schools in general were found to offer relatively little explicit science instruction concerning these phenomena. Classroom instruction tended to emphasize more abstract scientific concepts. It was left to the student to apply these concepts to his everyday environment and to resolve the differences from what was taught at home.

Students were interviewed concerning their explanations for twelve of the natural phenomena of importance to the Kpa-Mende. Each interview lasted approximately two hours, was open-ended, and was administered in the home language by two Kpa-Mende college students. Twenty-eight secondary school boys from one school were interviewed during the pilot study and 117 boys and 53 girls from five other schools were interviewed during the main study.

In the pilot study the phenomena were dichotomized between those with elaborated home explanations and those without. Using a three-point grading for school answers, the student responses to phenomena without home explanations were found to be statistically more like the schools than those with home explanations. The main study ranked the phenomena according to the percentage of fathers who discussed a single home culture explanation (range of 23 to 100 percent). Student responses

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were scored as before. A correlation of the adult percentages with student grouped scores was not significant. However, a correlation of adult percentages with the percentage of students expressing the same explanation (range of 8 to 85 percent) was significant at the .05 level). There were also a large number of responses where the student claimed to not know anything about the phenomenon. These responses were significantly correlated with the percentage of adults expressing a single home culture explanation.

Six student background variables (school attending, year in secondary school, parents' educational level, place of birth, Selective Entrance Examination score, and secret society participation) were used in an attempt to account for individual student differences in scores. The resulting multiple correlation coefficient was significant at the .01 level ($R^2 = .16$). However, only two of the partial correlations were significant: year in secondary school for the boys, and secret society participation for the girls. A later refinement attempted to identify the specific factors within the schools that might affect the results. Of six selected, only the religion of the sponsoring agency for the school emerged as significant, with the students in the Roman Catholic schools using more school information to discuss the selected phenomena than the students in United Methodist schools. Another refinement attempted to test whether the boys' results were affected by differences related to the amount of overall school experience or by the differences in the accumulated amount of experience in science-related classes. There was no significant evidence to support one rather than the other of these experiences.

Beyond the purely statistical analysis, it was important to note the extent to which the secondary school students failed to use school information. Thirty-nine of the 170 did not use <u>any</u> school information.

The major implication of this study for science educators relates to this persistence of home learning. Strategies need to be developed to sensitize teachers to non-school learning and to assist the students in selecting the most useful information without degrading their home culture.